

### Abstract

An integrated injection-pumping fixture for transferring heat from a higher-temperature loop to a lower-temperature loop (e.g., in radiant heating, from a boiler loop to a radiant loop). The fixture provides an injection loop for transferring heat from the higher-temperature loop to the lower-temperature loop. The fixture comprises an integrated casting, in which are formed higher-temperature supply and return ports, lower-temperature supply and return ports, an injection pump volute, and a lower-temperature pump volute. Liquid from the higher-temperature loop enters the integrated casting through the higher-temperature supply port, mixes with liquid circulating in the lower-temperature loop, and leaves the integrated casting through the higher-temperature return port. Liquid circulating in the lower-temperature loop enters the integrated casting through the lower-temperature return port, mixes with liquid entering from the higher-temperature loop, and leaves the integrated casting through the lower-temperature supply port. The invention simplifies installation by integrating into one integrated casting all four ports and both the injection pump and lower-temperature loop pump.

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